Attack #	Start Time	End Time	Attack Point	Start State	Attack	Actual Change	Expected Impact or attacker intent	Unexpected Outcome
1	28/12/2015 10:29:14	10:44:53	MV-101	MV-101 is closed	Open MV-101	Yes	Tank overflow	
2	28/12/2015 10:51:08	10:58:30	P-102	P-101 is on where as P-102 is off	Turn on P-102	Yes	Pipe bursts	
3	28/12/2015 11:22:00	11:28:22	LIT-101	Water level between L and H	Increase by 1 mm every second	No	Tank Underflow; Damage P-101	
4	28/12/2015 11:47:39	11:54:08	MV-504	MV-504 is closed	Open MV-504	Yes	Halt RO shut down sequence; Reduce life of RO	No impact
5	28/12/2015 11:58:20		No Physical Impact Attack					
6	28/12/2015 12:00:55	12:04:10	AIT-202	Value of AIT-202 is >7.05	Set value of AIT-202 as 6	No	P-203 turns off; Change in water quality	Impact seen on AIT-504 after two hours at around 14:15. It increased above HH but Drainage did not start
7	28/12/2015 12:08:25	12:15:33	LIT-301	Water level between L and H	Water level increased above HH	No	Stop of inflow; Tank underflow; Damage P-301	
8	28/12/2015 13:10:10	13:26:13	DPIT-301	Value of DPIT is <40kpa	Set value of DPIT as >40kpa	No	Backwash process is started again and again; Normal operation stops; Decrease in water level of tank 401. Increase in water level of tank 301	
9	28/12/2015 14:15:00		No Physical Impact Attack					
10	28/12/2015 14:16:20	14:19:00	FIT-401	Value of FIT-401 above 1	Set value of FIT-401 as <0.7	No	UV shutdown; P-501 turns off;	UV did not shutdown; P-501 did not turn off
11	28/12/2015 14:19:00	14:28:20	FIT-401	Value of FIT-401 above 1	Set value of FIT-401 as 0	No	UV shutdown; P-501 turns off;	
12	29/12/2015 11:10:40		No Physical Impact Attack					
13	29/12/2015 11:11:25	11:15:17	MV-304	MV-304 is open	Close MV-304	Yes	Halt of stage 3 because change in the backwash process	UF Startup did not stop because MV-304 was closed late
14	29/12/2015 11:35:40	11:42:50	Mv-303	MV-303 is closed	Do not let MV-303 open	Yes	Halt of stage 3 because change in the backwash process	Attack Failed because Startup sequence did not start because Tank 301 was already full
15	29/12/2015 11:52:01		No Physical Impact Attack					
16	29/12/2015 11:57:25	12:02:00	LIT-301	Water level between L and H	Decrease water level by 1mm each second	No	Tank Overflow	
17	29/12/2015 14:38:12	14:50:08	MV-303	Closed	Do not let MV-303 open	Yes	Halt of stage 3 because change in the backwash process	
18	29/12/2015 18:08:55		No Physical Impact Attack					
19	29/12/2015 18:10:43	18:15:01	AIT-504	Value of AIT-504 <15 uS/cm	Set value of AIT-504 to 16 uS/cm	No	RO shut down sequence starts after 30 minutes. Water should go to drain	RO did not shutdown; Water did not go to drain
20	29/12/2015 18:15:43	18:22:17	AIT-504	Value of AIT-504 <15 uS/cm	Set value of AIT-504 to 255 uS/cm	No	RO shut down sequence starts after 30 minutes. Water should go to drain	RO did not shutdown; Water did not go to drain
21	29/12/2015 18:30:00	18:42:00	MV-101, LIT-101	MV-101 is open; LIT-101 between L and H	Keep MV-101 on countinuosly; Value of LIT-	Yes	Tank overflow	
22	29/12/2015 22:55:18	23:03:00	UV-401, AIT-502, P-501	UV-01 is on; AIT-502 is <150; P-501 is open	Stop UV-401; Value of AIT502 set as 150; Fc	Yes	Possible damage to RO	P501 could not be kept on; Reduced output at FIT-502
23	30/12/2015 01:42:34	01:54:10	P-602, DIT-301, MV-30	DPIT-301 is <0.4 bar; MV-302 is on; P-602 i	Value of DPIT-301 set to >0.4 bar; Keep MV	Yes	System freeze	
24	30/12/2015 09:51:08	09:56:28	P-203, P-205	P-203 is on; P-205 is on	Turn of P-203 and P-205	Yes	Change in water quality	Not much impact made due to closure of P-101 because tank T-101 became full
25	30/12/2015 10:01:50	10:12:01	LIT-401, P-401	Value of LIT-401 <1000; P-402 is on	Set value of LIT-401 as 1000; P402 is kept o	Yes	Tank underflow	
26	30/12/2015 17:04:56	17:29:00	P-101, LIT-301	P-101 is off; P-102 is on; LIT-301 is betwee	P-101 is turned on continuosly; Set value of	Yes	Tank 101 underflow; Tank 301 overflow	
27	31/12/2015 01:17:08	01:45:18	P-302, LIT-401	P302 is on, LIT401 Is between L and H	Keep P-302 on contineoulsy; Value of LIT40	Yes	Tank overflow	
28	31/12/2015 01:45:19	11:15:27	P-302	P302 is on	Close P-302	Yes	Stop inflow of tank T-401	
29	31/12/2015 15:32:00	15:34:00	P-201, P-203, P-205	P-201 is closed; P-203 is closed; P-205 is cl	Turn on P-201; Turn on P-203; Turn on P-20	Yes	Wastage of chemicals	The three dosing pump did not start because of some mechanical interlock
30	31/12/2015 15:47:40	16:07:10	LIT-101, P-101, MV-201	P-101 is off; MV-101 is off; MV-201 is off; L	Turn P-101 on continuously; Turn MV-101 o	Yes	Tank 101 underflow; Tank 301 overflow	
31	31/12/2015 22:05:34	22:11:40	LIT-401	Water level between L and H	Set LIT-401 to less than L	No	Tank overflow	
32	1/01/2016 10:36:00	10:46:00	LIT-301	Water level between L and H	Set LIT-301 to above HH	No	Tank underflow; Damage P-302	
33	1/01/2016 14:21:12	14:28:35	LIT-101	Water level between L and H	Set LIT-101 to above H	No	Tank underflow; Damage P-101	
34	1/01/2016 17:12:40	17:14:20	P-101	P-101 is on	Turn P-101 off	Yes	Stops outflow	Outflow did not stop because the system turned on P-102
35	1/01/2016 17:18:56	17:26:56	P-101; P-102	P-101 is on; P-102 is off	Turn P-101 off; Keep P-102 off	Yes	Stops outflow	
36	1/01/2016 22:16:01	22:25:00	LIT-101	Water level between L and H	Set LIT-101 to less than LL	No	Tank overflow	
37	2/01/2015 11:17:02	11:24:50	P-501, FIT-502	P-501 is on; FIT-502 in normal range	Close P-501; Set value of FIT-502 to 1.29 at	No	Reduced output	P-501 did not turn off; FIT-502 decreased to 0.8; Speed of P-501 increased to 28.50 Hz from 10 Hz during attack.
38	2/01/2015 11:31:38	11:36:18	AIT-402, AIT-502	In Normal Range	Set value of AIT402 as 260; Set value of AIT	No	Water goes to drain because of overdosing	Water did not go to the drain
39	2/01/2015 11:43:48	11:50:28	FIT-401, AIT-502	In Normal Range	Set value of FIT-401 as 0.5; Set value of AIT-	No	UV will shut down and water will go to RO	UV did not shutdown
40	2/01/2015 11:51:42	11:56:38	FIT-401	In Normal Range	Set value of FIT-401 as 0	No	UV will shut down and water will go to RO	P-402 did not close, both should be interlinked
41	2/01/2015 13:13:02	13:40:56	LIT-301	Water level between L and H	decrease value by 0.5 mm per second	No	Tank overflow	Rate of decrease in water level reduced after 1:33:25 PM

Single Stage Single Point Attacks
Single Stage Multi Point Attacks
Multi Stage Single Point Attacks
Multi Stage Multi Point Attacks

We changed the value to constant in 26. ICS2 stopped showing the value because it was not changing. When we stopped the attack, it interpolated the points in between. It should have shown a steep increase in level. They will not detect attacks where value is constant